DOCUMENT RESUME

ED 460 963 TM 029 977

AUTHOR	Coley, Richard J., Ed.
TITLE	Opportunity Offered--Opportunity Taken: Course-Taking in American High Schools.
INSTITUTION	Educational Testing Service, Princeton, NJ. Policy Information Center.
PUB DATE	1999-00-00
NOTE	10p.; Theme issue. Condensation of "Course-Taking in American High Schools: Opportunity Offered--Opportunity Taken" by Jeremy D. Finn.
AVAILABLE FROM	ETS Policy Information Center, Educational Testing Service, Rosedale Road, O--R, Princeton, NJ 08541-0001. Tel: 609-734-5694; Web site: http://www.ets.org/research/pic.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	ETS Policy Notes; v9 n1 Spr 1999
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Course Selection (Students); *High School Students; High Schools; Mathematics Education; Private Schools; Public Schools; Racial Differences; Required Courses; Rural Schools; Science Education; Second Language Learning; Sex Differences; Small Schools; Socioeconomic Status

ABSTRACT

The courses U.S. high school students select, differences in course offerings across different types of schools, and course-taking patterns by race, gender, and socioeconomic status were studied. In general, the study found that public, secular private, and Catholic schools were more similar than different in their course offerings. Most striking was the relative lack of advanced course offerings in science and foreign languages, especially among secular private schools. Just under half of all schools require 3 or more years of mathematics, and only 32% of public high school students took 3 years of mathematics. One-fifth of all students took no coursework in foreign languages. In general, across mathematics, science, and foreign languages, students in private schools took more courses than students in public schools, but there were no significant differences in course selection among school types. The breadth and depth of course offerings were consistently lacking in schools in small and rural communities, and problems were also found in low socioeconomic status schools. African American and Hispanic students tended to take fewer mathematics, science, and foreign language courses. Student tracking had a strong and consistent effect on course-taking. Students in non-academic tracks did not take an extensive coursework, or as much advanced coursework, as students in academic tracks. Tracking is clearly detrimental to the selection of higher-level courses. Increased graduation requirements had more effect on basic than on advanced coursework. Implications for educational improvement are discussed. (Contains two figures and one table.) (SLD)

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ED 460 963

ETS POLICY NOTES

News from the ETS Policy Information Center

VOLUME 9, Number 1 Spring 1999

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News from the ETS Policy Information Center

Volume 9, Number 1 | Educational Testing Service | Spring 1999

This Issue: Opportunity Offered—Opportunity Taken: Course-Taking in American High Schools

Editor's Note: This issue of *ETS Policy Notes* is a condensation of *Course-Taking in American High Schools: Opportunity Offered, Opportunity Taken*, by Jeremy D. Finn, Professor, Graduate School of Education, SUNY Buffalo, 408 Baldy Hall, Buffalo, NY 14260. This research was conducted while Dr. Finn was Visiting NAEP Scholar at Educational Testing Service.

Copies of the full report can be obtained from Dr. Finn by calling 716-645-2482, or via email: finn@acsu.buffalo.edu.

Additionally, two related reports, focused on mathematics and foreign language, are also available from Dr. Finn. These are:

Jeremy D. Finn, "Taking Foreign Languages in High School," *Foreign Language Annals*, 31, 287-306, 1998, and Jeremy D. Finn, *Course-Taking in Mathematics and Foreign Languages*, paper presented at the annual meeting of the American Educational Research Association, San Diego, April 1998.

Opportunity Offered—Opportunity Taken: Course-Taking in American High Schools

Introduction

In 1983, the National Commission on Excellence in Education sounded an alarm about the dismal state of academic competence among American high school graduates. The landmark report showed that, in general, our schools offer too many survey courses and too few courses that offer challenging content.

The commission described the high school curriculum as "... cafeteria style ... in which the appetizers and desserts can easily be mistaken for main courses." It recommended that minimum requirements for high school graduation should include four years of English; three years each of mathematics, science, and social studies; and one-half year of computer science. In addition, the commission recommended that college-bound students also be required to take two years of foreign language. Subsequently, many states, districts, and schools revised their curriculum requirements to conform to part or all of these recommendations.

The research in this area is unambiguous—academic achievement is directly related to the investment students make in challenging coursework. Furthermore, the benefits of taking more courses cannot solely be explained by the characteristics of the students who take them. The relationship between course-taking and achievement holds after controlling for socioeconomic status, aptitude, and/or

prior achievement. In addition, taking courses in one subject may promote learning in other subjects. Thus, it is critically important to examine the antecedents of course-taking among American students.

What courses are American high school students taking? Are there differences in course offerings across different types of schools? Are there systematic differences in course-taking patterns by gender, race, or socioeconomic status? This condensation of *Course-Taking in American High Schools: Opportunity Offered, Opportunity Taken* provides answers to these questions and discusses some of the implications of the findings.[1] It focuses on the subjects of mathematics, science, and foreign language.

The Context of Course-Taking

Student course-taking reflects both "opportunity offered" by schools and "opportunity taken" by students. For example, the courses a school offers delimits the courses students can take and thus what students can learn. On the other hand, students may limit their own learning by not taking advantage of the educational opportunities their schools provide.

Within a subject, both the breadth and depth of course offerings are important. A school's curriculum can contain mostly "basic" or "survey" courses, or it can contain an array of advanced courses. Some courses are important because they serve as gatekeepers to other, more advanced courses, for example, algebra 1. In spite of their importance, however, advanced courses and gatekeeper courses are not equally available to all groups of students.

But attending a school with extensive course offerings may not be enough to assure that students are exposed to challenging material. If advanced courses are not required for graduation, students may not take them. Furthermore, schools may engage in practices that deny access to some groups of students; tracking stands out as particularly important and is discussed later in this newsletter.

What Do Schools Offer?

In mathematics, school offerings were generally commendable. Schools offered a substantial range of topics—the average and modal number across all schools was six. All schools offered advanced coursework in two or more areas, and most schools offered more than two. Compared to public and Catholic schools, fewer secular private schools offered seven or eight mathematics topics.

Most schools offered an assortment of courses in three or four areas of science; only a small number offered coursework in only two areas. Public schools were more likely than secular private schools and Catholic schools to offer courses in five areas.

The picture for *advanced* science courses, however, is not as encouraging. About one-third of all American high schools did not offer any advanced science work, and another 28 percent offered advanced coursework in only one subject, most commonly biology. More private schools than public schools

[1] This research is based on the High School Transcript Study, a component of the National Assessment of Educational Progress, and on a national sample of students who graduated from high school in 1994. Two caveats are noteworthy. First, students who dropped out of high school (about one-fourth of those who enter grade nine) were not included in the survey. It is likely that these students are disproportionately enrolled in low-socioeconomic schools and are not as likely as other students to enroll in advanced courses. Second, this study did not examine course content.

offered no advanced courses; and more public schools offered advanced courses in three or more areas of science.

All schools offered some study in foreign languages—less than one-third offered study in only one language, and most schools offered at least an introduction to two or three different languages. More than one-fourth of public schools and almost one-half of secular private schools offered fewer than three years of study in any foreign language, while all Catholic schools offered advanced study in one or more languages.

In general, public, secular private, and Catholic schools were more similar than different in their course offerings. Most striking was the paucity of advanced course offerings in science and foreign languages, particularly among secular private schools.

What Courses Do Schools Require?

With respect to the recommendations of the National Commission, just under half (42 percent) of American high schools required three years or more of mathematics. Almost as many schools required two years of mathematics (38 percent). Even fewer schools required the recommended three years or more of science—about 27 percent. In fact, more than half of American high schools required only two years for graduation. And despite the commission's recommendations, foreign languages were rarely required—74 percent of high schools *did not require any* foreign language courses for graduation, about 6 percent required one or two semesters, and only about 16 percent required four semesters or more. In all three subjects, especially foreign languages, graduation requirements for secular private schools and Catholic schools were greater than those for public schools.

What Courses Do Students Take?

In mathematics, 32 percent of public school students took three years, 9 percent took three and one-half years, and 30 percent took four years. For private school students (Catholic and secular private combined), the comparable figures were 26 percent, 11 percent, and 43 percent. It is important to note that these courses included survey and remedial mathematics, as well as advanced coursework.

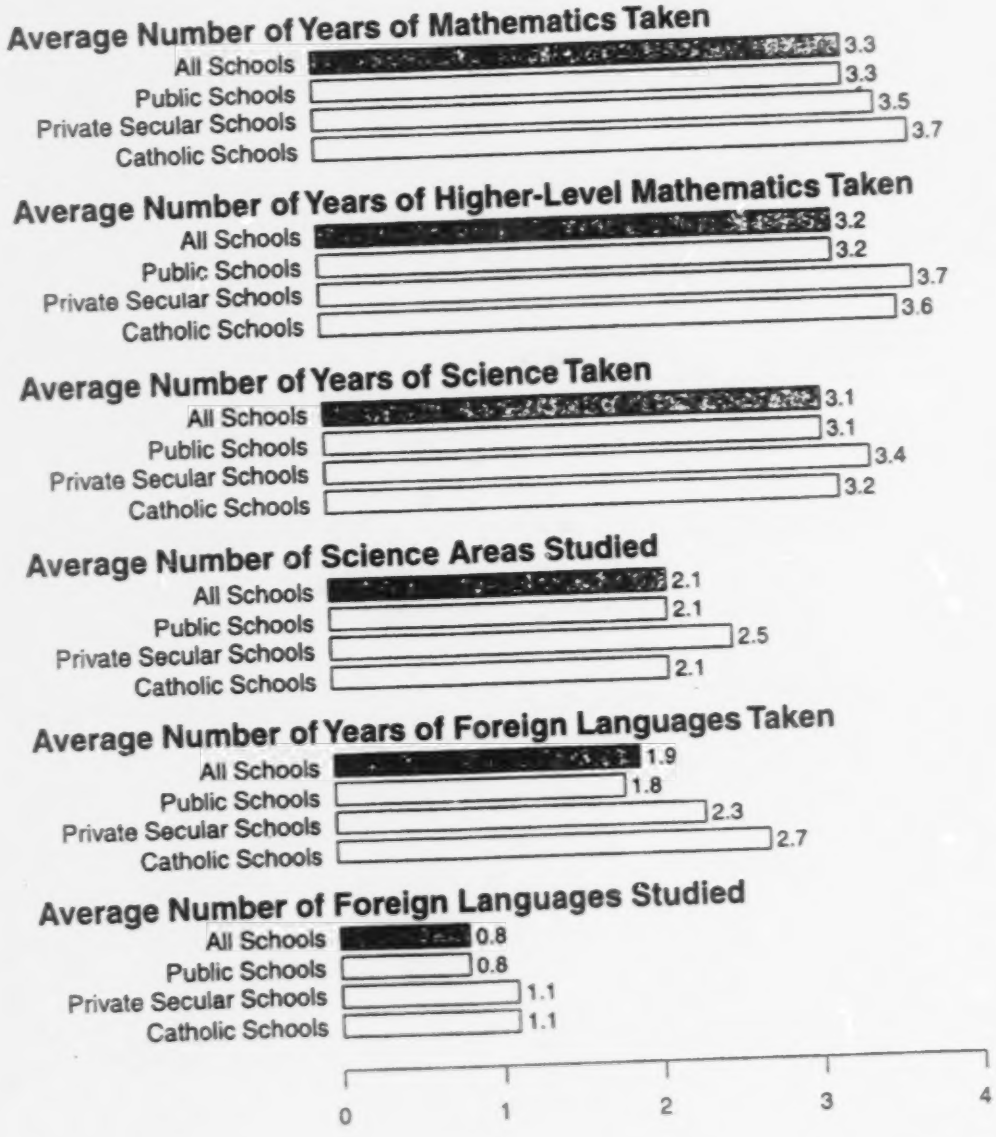
In science, 29 percent of public school students took two or two and one-half years of science, 38 percent took three or three and one-half years, and another 30 percent took four years or more. The comparable numbers for private school students were 17 percent, 43 percent, and 38 percent.

One-fifth of public school students took no coursework in foreign languages, compared to only 4 percent of private school students. Nearly one-fifth of private school students took four or more years of foreign languages.

Figure 1 displays data on the quantity of course-taking in mathematics, science, and foreign language for public, private secular, and Catholic high school students. For mathematics, it shows the average number of years taken as well as the average number of years of higher-level mathematics taken.[2] In science, it shows the average number of years taken and the average number of science

[2] Higher-level mathematics courses are defined as algebra 2 or higher; all calculus courses; computer mathematics courses beyond the basic level; and all courses in geometry, statistics, and trigonometry.

Figure 1- Course-Taking Averages in Mathematics, Science, and Foreign Language



Source: High School Transcript Study, National Assessment of Educational Progress, 1994.

areas studied. For foreign language, it shows the average number of years taken and the average number of languages studied.

In general, across the three subjects, students in private schools took more courses than students in public schools. There were no significant differences between Catholic schools and private secular schools, and students in Catholic schools took more courses in mathematics and foreign language than students in public schools.

In mathematics, students in private secular and Catholic schools took more higher-level mathematics courses than students in public schools. Significant differences were also found in the number of foreign languages studied. Although the average number of languages studied was close to one for all three types of schools, students in private secular schools and Catholic schools took more languages than students in public schools.

Likewise, students in both types of private schools studied a foreign language for more years than their public school counterparts. The average years of foreign language studied for secular private and Catholic school students was about two and one-half years, as high as the National Commission's recommendation.

Overall, males and females took very similar numbers of courses, and the same depth of coursework, in mathematics and science.

Figure 2 shows the percentage of students who completed the three different levels of curriculum described in Table 1.

Only 13 percent of American high school graduates completed the National Commission's recommendation for a challenging curriculum (comprehensive). That means that nearly seven out of eight students did not! The completion rates go up when the foreign language requirements are discounted—about half of high school graduates completed this mid-level curriculum, while 75 percent of students completed a basic curriculum.

Table 1 - Three Levels of Curriculum Requirements (in Years)

	Comprehensive	Mid-Level	Basic
English	4	4	4
Social Studies	3	3	3
Math	3	3	2
Science	3	3	2
Foreign Language	2	0	0

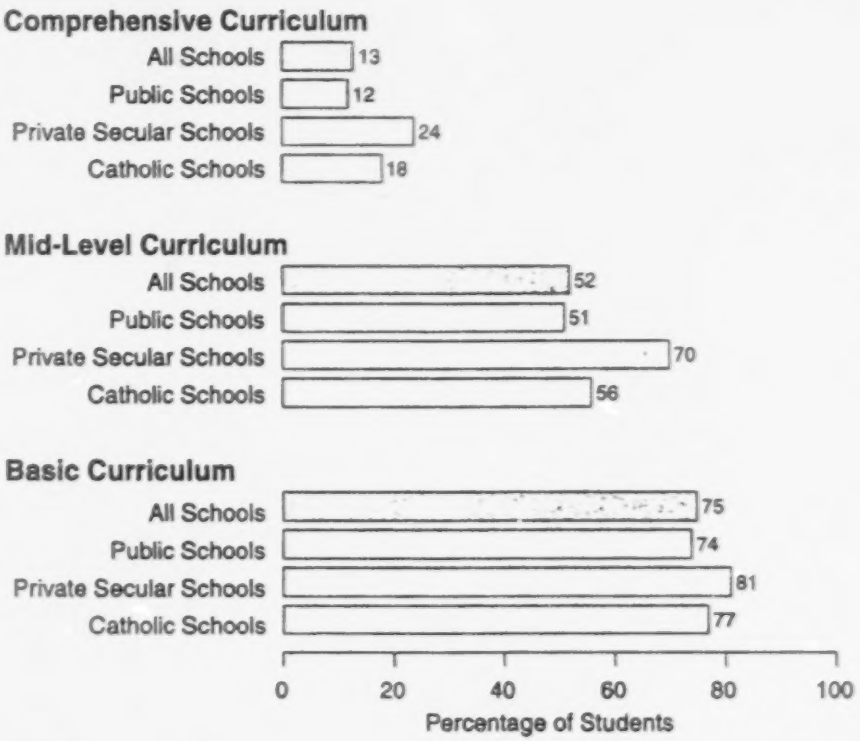
Although the percentage of private school students completing each level of curriculum was somewhat higher than that of public school students, by and large, there were no statistically significant differences among school types. Likewise, completion rates for males and females were very similar.

Are There Differences in Offerings Among Schools?

Both the breadth and depth of course offerings were consistently lacking in schools located in small and rural communities. Problems were also found in low-socioeconomic status (SES) schools. For example, schools enrolling the poorest students offered fewer and less-advanced mathematics courses than were offered by high-SES schools.

Similarly, the average number of science areas offered declined as the percentage of poverty increased in schools. In fact, only about 1 percent of low-SES schools offered courses in five science areas, and the average number of advanced science courses offered in these

Figure 2 - Percentage of Students Completing Curriculum Requirements, by Curriculum Level



Comprehensive is defined as 4 years of English; 3 years each of social studies, mathematics, and science; two years of foreign language; and one-half year of computer science. Mid-Level is defined as 4 years of English and 3 years each of social studies, mathematics, and science. Basic is defined as 4 years of English, 3 years of social studies, and 2 years each of mathematics and science.

Source: *High School Transcript Study*, National Assessment of Educational Progress, 1994.

schools was less than one. Almost half of low-SES schools offered no advanced science courses.

The greatest differences were in foreign language offerings. Both the number of languages introduced and the number of languages offered for three years or more decreased as poverty increased. Sixty percent of low-SES schools offered only one foreign language, compared to only 16 percent of schools in the high-SES category. The average number of languages available for three or more years in low-SES schools was less than one.

To see if these differences persisted when viewed in a broader context, multiple regression analyses were conducted. These analyses found that more mathematics courses were offered in high-SES schools than in low-SES schools. However, there was no evidence that low-SES schools offered fewer advanced courses, or that there were inequities in terms of the balance of basic and advanced mathematics courses.

In science, the number of areas offered by a school, as well as the availability of advanced-study courses, appeared to be negatively

related to a school's socioeconomic status. As with mathematics, however, the curricular balance of advanced-to-basic courses did not differ according to SES.

In foreign language, there were pronounced differences between high- and low-SES schools, both in the number of languages available at an introductory level and the opportunity for advanced study.

These differences in course offerings and requirements can interact with school policies and course selection procedures, potentially limiting opportunities for some students more than for others. The remaining question concerns the ultimate impact these factors will have on the courses that students actually take.

The Equity of Course-Taking

Which school characteristics and practices are related to disparities in course-taking? Students attending schools in small communities, with fewer advanced course offerings and lower graduation requirements, took fewer and less-advanced courses in mathematics, science, and foreign language. On the other hand, little evidence was found that students in low-SES schools took fewer courses in general. However, students in high-SES schools took more courses, and more advanced courses, than students attending schools in other SES categories.

Males and females took similar numbers of mathematics and science courses, while females studied foreign languages more extensively. However, the availability of advanced science courses appears to have favored males, who studied science more extensively than females when the opportunity to do so (offerings and requirements) was increased.

Compared to White students, African American and Hispanic students took fewer mathematics, science, and foreign language courses. This pattern was not affected by the availability of advanced courses or by the school's graduation requirements. However, minority students in general, and African American students in particular, appeared to have gained an advantage in course-taking by attending a private school or a suburban public school (in contrast to a large-city public school).

Finally, student tracking had a strong and consistent impact on course-taking. Students in non-academic tracks did not take as extensive coursework, or as much advanced coursework, as students in academic tracks. The availability of advanced courses provided further advantage to students in academic tracks, but not to those in non-academic tracks, exacerbating the difference.[3] On the other hand, increases in graduation requirements appeared to have an important positive impact on the coursework taken by students in non-academic tracks.

[3] For information on the effects of tracking see, for example, Jeannie Oakes, *Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science*, Santa Monica: The RAND Corporation, 1990.

Conclusion

This study was based on the premise that course-taking is a form of student engagement that reflects the course offerings of a school and the school's policies and practices that determine access to courses, and, ultimately, students' own choices. Because differences among schools in course offerings were not consistently large, differences in course-taking may be attributed largely to school policies and practices. Two are implicated in particular.

The first detrimental practice is tracking. In most cases, assigning students to non-academic tracks curtails their access to advanced courses. These students may be subjected to lower expectations, receive lower-quality instruction, be exposed to "watered-down" content, have less access to other school resources, and have little or no opportunity to progress to a more challenging program. Research and intervention programs to increase opportunities for such students are essential.

The second problematic issue relates to how graduation requirements are set. This study, like others, found that increased requirements had more effect on basic than on advanced coursework, and had greatest impact on the total credits taken by lower-ability students. Targeting the requirements to particular groups of students and specifying advanced coursework in the requirements might go a long way toward increasing advanced course-taking among these students. While increasing access may be insufficient to attract students to advanced coursework, requiring such work might be beneficial. For students who are unable to move directly into advanced courses, transition courses are an option that has enjoyed some success. Research should be undertaken to examine the benefits, and problems, of different patterns of academic requirements.

ETS Policy Notes is published by the ETS Policy Information Center, Educational Testing Service, Princeton, NJ 08541-0001 (609) 734-5694.

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04202-02536 • S59M7 • Printed in the U.S.A.
I.N. 204865

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